

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A mutated alkaline cellulase which is obtained by deleting, from a cellulase having the amino acid sequence of SEQ ID NO: 2 or a homologous amino acid sequence exhibiting at least 95% sequence homology therewith, a peptide consisting of one or more amino acid residues chosen from the ~~343rd to 377th~~ 357th to 362nd positions in SEQ ID NO: 2 or from corresponding positions of said homologous amino acid sequence and replacing the peptide with an insertion peptide ~~having 2 to 15 amino acid residues selected from the group consisting of:~~

asparagine-threonine-alanine-valine-glycine-isoleucine,

alanine-serine-methionine-leucine-phenylalanine-glutamic acid,

cysteine-leucine-glycine-histidine-serine,

tyrosine-glutamine-lysine-alanine-alanine,

aspartic acid-methionine-isoleucine-valine,

isoleucine-threonine-proline-lysine,

glycine-leucine-cysteine,

serine-valine-phenylalanine, and

a peptide containing alanine residues at both ends thereof and having 3 to 6 residues,

wherein said mutated alkaline cellulase has alkaline cellulase activity.

2. – 3. (Canceled)

4. (Currently Amended) The mutated alkaline cellulase as described in claim 1, wherein said insertion peptide containing alanine residues at both ends thereof and having 3

to 6 residues, contains as structural amino acid residues thereof, alanine and glycine, alanine and histidine, or alanine and arginine.

5. (Previously Presented) The mutated alkaline cellulase as described in claim 1, wherein said insertion peptide is selected from the group consisting of alanine-glycine-alanine, alanine-histidine-alanine, and alanine-arginine-alanine.

6. (Previously Presented) An isolated polynucleotide encoding a mutated alkaline cellulase as recited in claim 1.

7. (Previously Presented) A recombinant vector comprising the polynucleotide as recited in claim 6.

8. (Previously Presented) An isolated transformed microorganism comprising a recombinant vector as recited in claim 7.

9. (Canceled)

10. (Previously Presented) A method for producing a mutated alkaline cellulase, which comprises culturing the isolated transformed microorganism of claim 8 in a medium for a time and under conditions suitable to produce and accumulate said mutated alkaline cellulase, and isolating said mutated alkaline cellulase.

11. (Previously Presented) The mutated alkaline cellulase as described in claim 1, wherein the homologous amino acid sequence exhibits at least 98% sequence homology to the amino acid sequence of SEQ ID NO: 2.

12-13. (Canceled)

14. (Currently Amended) A mutated alkaline cellulase which is obtained by deleting, from a cellulase selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 9, a peptide consisting of one or more amino acid residues chosen from the positions corresponding to the ~~343rd to 377th~~ 357th to 362nd positions of SEQ ID NO: 2, and replacing the peptide with an insertion peptide having ~~2 to 15~~ 2 to 6 amino acid residues, wherein said mutated alkaline cellulase has alkaline cellulase activity.

15. (Currently Amended) ~~The mutated alkaline cellulase according to claim 14, which is obtained by deleting a peptide consisting of one or more amino acid residues chosen from the positions corresponding to the 357th to 362nd positions of SEQ ID NO: 2 and replacing the peptide with an~~ wherein said insertion peptide having 2 to 5 amino acid residues.

16. (Currently Amended) ~~The mutated alkaline cellulase as described in claim 14, which is obtained by deleting a peptide consisting of all of the amino acid residues chosen from the positions corresponding to the 357th to 362nd positions of SEQ ID NO: 2 and replacing the peptide with an~~ wherein said insertion peptide having 3 amino acid residues.

17. (Previously Presented) The mutated alkaline cellulase as described in claim 14, wherein said insertion peptide contains as structural amino acid residues thereof, alanine and glycine, alanine and histidine, or alanine and arginine.

18. (Previously Presented) The mutated alkaline cellulase as described in claim 14, wherein said insertion peptide is selected from the group consisting of alanine-glycine-alanine, alanine-histidine-alanine, and alanine-arginine-alanine.

19. (Previously Presented) An isolated polynucleotide encoding a mutated alkaline cellulase as recited in claim 14.

20. (Previously Presented) A recombinant vector comprising the polynucleotide as recited in claim 19.

21. (Previously Presented) An isolated transformed microorganism comprising a recombinant vector as recited in claim 20.

22. (Previously Presented) A method for producing a mutated alkaline cellulase, which comprises culturing the isolated transformed microorganism of claim 21 in a medium for a time and under conditions suitable to produce and accumulate said mutated alkaline cellulase, and isolating said mutated alkaline cellulase.

23. (New) The mutated alkaline cellulase as described in claim 14, wherein said insertion peptide is selected from the group consisting of:

asparagine-threonine-alanine-valine-glycine-isoleucine,
alanine-serine-methionine-leucine-phenylalanine-glutamic acid,
cysteine-leucine-glycine-histidine-serine,
tyrosine-glutamine-lysine-alanine-alanine,
aspartic acid-methionine-isoleucine-valine,
isoleucine-threonine-proline-lysine,
glycine-leucine-cysteine, and
serine-valine-phenylalanine.

24. (New) A method of producing the mutated alkaline cellulase comprising deleting from a cellulase having the amino acid of sequence of SEQ ID NO: 2 or a homologous amino acid sequence exhibiting at least 95% sequence homology therewith, a peptide consisting of one or more amino acid residues chosen from the 357th to 362nd positions in SEQ ID NO: 2 or from corresponding positions of said homologous amino acid sequence and replacing the peptide with an insertion peptide having 2 to 6 amino acid residues, wherein said mutated alkaline cellulase has alkaline cellulase activity.

25. (New) The method of claim 24, wherein said insertion peptide is selected from the group consisting of:

asparagine-threonine-alanine-valine-glycine-isoleucine,
alanine-serine-methionine-leucine-phenylalanine-glutamic acid,
cysteine-leucine-glycine-histidine-serine,
tyrosine-glutamine-lysine-alanine-alanine,
aspartic acid-methionine-isoleucine-valine,

isoleucine-threonine-proline-lysine,
glycine-leucine-cysteine, and
serine-valine-phenylalanine.

26. (New) The method of claim 24, wherein said insertion peptide having 2 to 5 amino acid residues.

27. (New) The method of claim 24, wherein said insertion peptide having 3 amino acid residues.

28. (New) The method of claim 24, wherein said insertion peptide contains alanine residues at both ends thereof and having 3 to 6 residues.

29. (New) The method of claim 24, wherein said insertion peptide contains as structural amino acid residues thereof, alanine and glycine, alanine and histidine, or alanine and arginine.

30. (New) The method of claim 24, wherein said insertion peptide is selected from the group consisting of alanine-glycine-alanine, alanine-histidine-alanine, and alanine-arginine-alanine.

31. (New) A method of producing the mutated alkaline cellulase comprising deleting from a cellulase selected from the group consisting of SEQ ID NO: 7, SEQ ID NO: 8, and SEQ ID NO: 9, a peptide consisting of one or more amino acid residues chosen from the

positions corresponding to the 357th to 362nd positions of SEQ ID NO: 2, and replacing the peptide with an insertion peptide having 2 to 6 amino acid residues, wherein said mutated alkaline cellulase has alkaline cellulase activity.

32. (New) The method of claim 31, wherein said insertion peptide is selected from the group consisting of:

asparagine-threonine-alanine-valine-glycine-isoleucine,
alanine-serine-methionine-leucine-phenylalanine-glutamic acid,
cysteine-leucine-glycine-histidine-serine,
tyrosine-glutamine-lysine-alanine-alanine,
aspartic acid-methionine-isoleucine-valine,
isoleucine-threonine-proline-lysine,
glycine-leucine-cysteine, and
serine-valine-phenylalanine.

33. (New) The method of claim 31, wherein said insertion peptide having 2 to 5 amino acid residues.

34. (New) The method of claim 31, wherein said insertion peptide having 3 amino acid residues.

35. (New) The method of claim 31, wherein said insertion peptide contains alanine residues at both ends thereof and having 3 to 6 residues.

36. (New) The method of claim 31, wherein said insertion peptide contains as structural amino acid residues thereof, alanine and glycine, alanine and histidine, or alanine and arginine.

37. (New) The method of claim 31, wherein said insertion peptide is selected from the group consisting of alanine-glycine-alanine, alanine-histidine-alanine, and alanine-arginine-alanine.